CBIA - CEC Building Standards Forum

2016 Building Energy Efficiency Standards

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Authority & Process

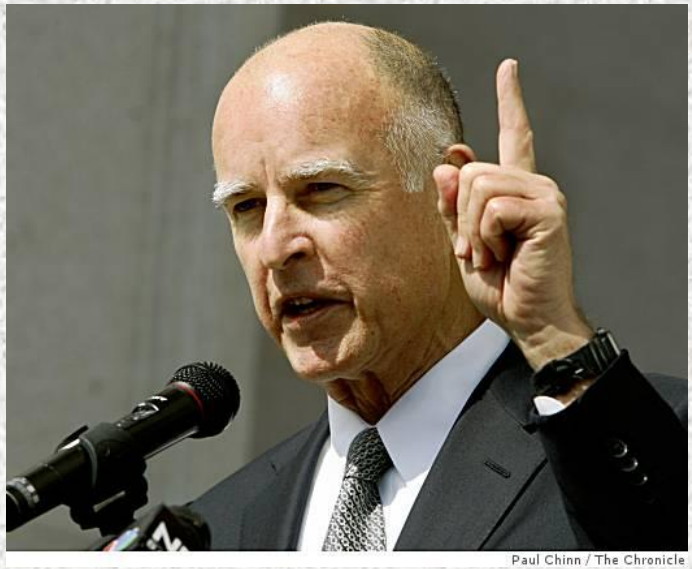
Public Resources Code (PRC 25402): Reduction of wasteful, uneconomic, inefficient or unnecessary consumption of energy

- (a)(1) Prescribe, by regulation, lighting, insulation climate control system, and other building design and construction standards that increase the efficiency in the use of energy and water…
- Warren Alquist Act Signed into law in 1974 by Governor Ronald Reagan

- Residential and Nonresidential Building Standards first adopted in 1978 and updated every 3-4 years
- The Standards are required to be cost effective
- The Standards include mandatory and prescriptive requirements, as well as performance approach
- The Standards are developed in an open public process

Policy Drivers

- Governor's “Clean Energy Jobs Plan”
- Zero Net Energy: Residential by 2020 and Nonresidential by 2030
- CARB Climate Change Scoping Plan
- California Long Term Energy Efficiency Strategic Plan



Paul Chinn / The Chronicle

JERRY BROWN Clean Energy Jobs Plan

More Efficient Buildings…

Require the manufacturing, design, installation, monitoring and maintenance of efficient systems and technologies, resulting in:

- Green Job Creation
- Higher Paying Jobs
- Investment By Entrepreneurs
- Global Competitiveness

"Most new jobs should and will be created in the private sector, but government can play an important role in establishing a favorable climate for job creation." *Governor Jerry Brown*

Title 24
2016
Standards

Clean Energy Jobs Plan

New Efficiency Standards for New Buildings

- Establish a plan and timeline to make new homes and commercial buildings "Zero Net Energy"
- Highly efficient structures that use onsite renewable energy for all their electricity and natural gas needs
- Design new more efficient buildings that use half the energy they use today

"Energy Efficiency is the cheapest, fastest, and most reliable way to create jobs, save consumers money and cut pollution from the power sector." *Governor Jerry Brown*

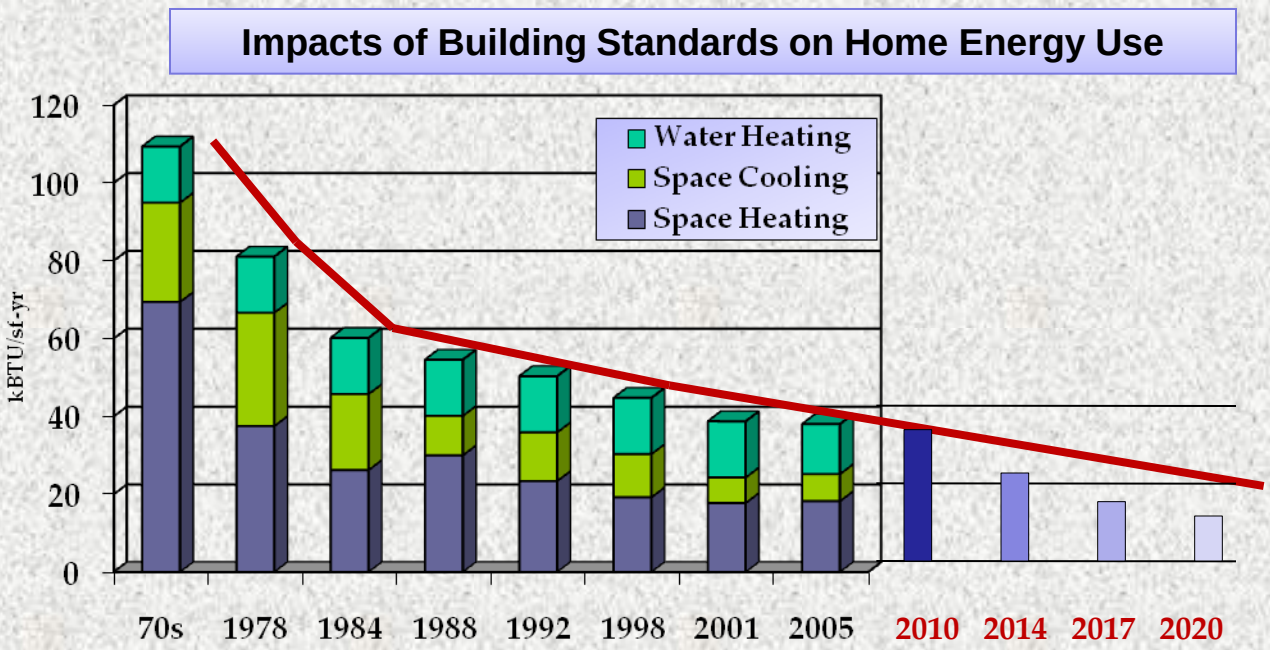
Standards Development Public Review

For 2013 Standards:

- An open and public process
- Convened more than 45 Industry stakeholder groups over several months to inform them of potential changes to the standards and to consider their input
- Held 15 Staff Workshops
- Responded to more than 2,000 public comments
- Builders are well represented through CBIA

Zero Net Energy Standards

- Achieve additional energy savings from building components regulated under Title-24 to reach ZNE goals
- Integrate onsite generation into building code to accomplish ZNE



Title 24
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Standards

2016 Standards Update Schedule

April 4, 2014	CBIA/CEC Standards Forum
April – June 2014	IOU CASE Stakeholder Meetings
May – Aug 2014	CEC Staff Public Workshops
December 2014	Draft 2016 Standards
January 2015	Release 45-day Language
April 2015	Release 15-Day Language
May 2015	Adoption at Business Meeting

Dates in blue indicate the calendar week targeted - the event is not scheduled for this particular date

2016 Standards Update Process

Standards Update Includes the Following Phases:

Pre-Rulemaking

1. Stakeholder Meetings - IOU/POU CASE Teams
2. Staff Workshops – Draft Standards

Rulemaking:

1. 45-day language
2. 15-Day language
3. Adoption Business Meeting

2016 Standards Update Process

Pre-Rulemaking

Stakeholder Meetings - IOU/POU CASE Teams

1. Held throughout the state by the utilities
2. Invite diverse group of stakeholders
3. One or two meetings per topic area
4. Present the CASE measure and seek comments
5. Consider the comments and modify the CASE reports
6. Submit all CASE reports to the Commission for staff workshops
7. The utility sponsors include, PG&E, SCE, SDG&E, So Cal Gas, SMUD, and LADWP

2016 Standards Update Process

Pre-Rulemaking - Continued

Staff Workshops

1. Held by staff at the Energy Commission
2. Open to the public
3. Generally one workshop per measure, sometimes two
4. Invite diverse group of stakeholders
5. Seek public comment on measures
6. The result will be the 2016 draft Standards

2016 Standards Update Process

Rulemaking :

Presided Over By The Lead Commissioner

1. 45-day language hearing
2. 15-day language hearing

Adoption Business Meeting – Entire Energy Commission

2016 Standards Vision

2016 Standards Approach Is A Departure From The Past

1. Not focused on a specific measure(s)
2. Define ZNE goals and energy use index (EUI) target
3. Provide the builders a range of options to meet the ZNE goals
4. Builders and manufacturers can come up with additional solutions with the same efficiency potentials for meeting the ZNE goals
5. Different builders based on their preferences choose unique prescriptive solutions or compliance options that work for them
6. Free market will settle on the most promising solutions
7. Create “buildable” prescriptive packages that builders can use to meet ZNE goals without using performance path – possible relaxation of west-facing glass limit

The rest of the day will demonstrate how this approach works

2016 Standards Range of Options

The builder may choose one option described in A or B below:

A. High Performance Attics (HPA) with following features:

i. Roof deck insulation equivalent to R-6 continuous insulation (CI) with RB, either above or below deck. Insulation choices may include CI, spray foam, batt, or blown-in, and SIP panels

ii. Highly reflective roofs or combining reflective roofs with roof deck insulation

iii. Or other solutions suggested by the industry

B. Or, one of the following prescriptive alternatives to HPA:

i. Ducts in conditioned space (DCS)

ii. Sealed attics

iii. Ductless systems

iv. Or other solutions suggested by the industry

2016 Standards Range of Options

Or choose either 1 or 2 from compliance options below as an alternative to HPA or DCS:

1. Photovoltaic tradeoff
2. Advanced Decentralized Whole House Fans

Also Create a Super High Efficiency Windows Compliance Credit

2016 Standards Range of Options

High Performance Walls – U-Factor equivalent to R23 + R6 CI using one of the following strategies:

1. 2x6 @ 24” OC with CI
2. Staggered studs with batt insulation or spray foam
3. Structurally Insulated Panels (SIPs)
4. Or other solutions suggested by the industry

2016 Standards Other Measures

Tankless Water Heaters

Basis of Prescriptive Package – Energy Factor of 0.82

High Efficacy Lighting

1. All high efficacy lighting in kitchens and support areas
2. All recessed downlights high efficacy
3. Allow luminaires with medium base socket as high efficacy if the socket is populated with a high quality LED lamp at the time of inspection

2016 Standards – Life Cycle Costing

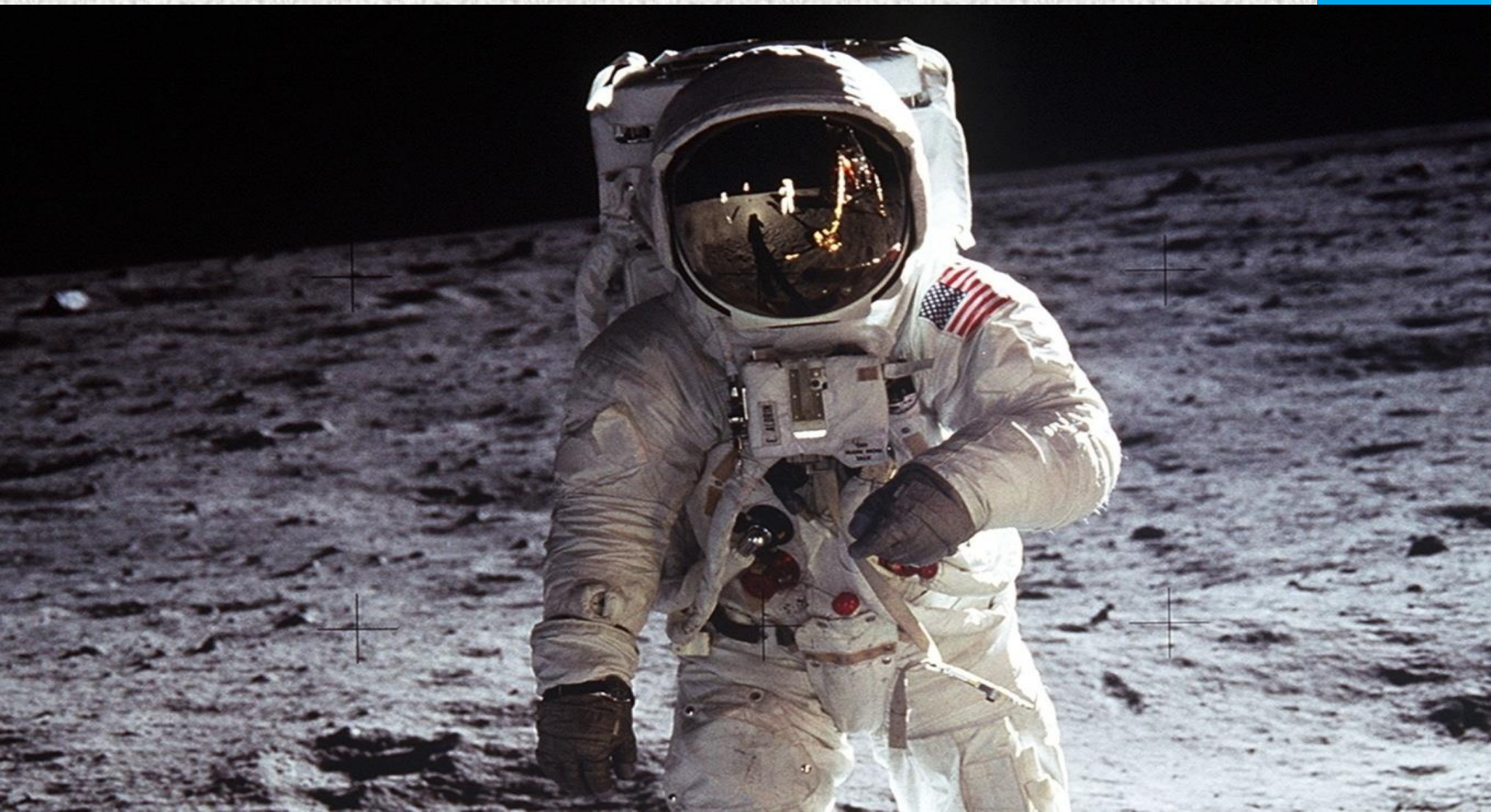
Standards measures must be cost effective

1. Using Life Cycle Costing Methodology (LCC)
   - i. Discounted cash flows for costs and benefits
   - ii. Accounts for maintenance costs/benefits
   - iii. Appropriate discount rates and life of measures - 30 years for residential measures

2. Time Dependent Valuation (TDV)
   - i. Value of gas and electricity changes depending on the season and the time of day
   - ii. 8,760 TDV multipliers for each hour of the year
   - iii. Favors measures that save energy during high demand periods

The ZNE Challenge: Cold Ducts In Hot Attics

And, finally the old cliché: *A nation that can put a man on the moon, should be able to figure out how to reduce the hot attic temperatures in our cooling climate zones*



Questions?